

## CLAIMS

I claim:

*Sub 1*  
A method of processing video comprising:

acquiring a video stream;

dividing said video stream into a plurality of sub-sections;

determining a probability of whether a transition to a separate sub-section is present  
at a sub-section of said video stream; and

embedding said probability of said transition into said sub-section of said video  
stream.

2. The method of Claim 1 wherein said determining said probability is performed by a classifier.
3. The method of Claim 2 wherein said classifier is provided a fixed-sized portion of said sub-section.
4. The method of Claim 1 further comprising outputting a location and duration of said transition in said video stream.
5. The method of Claim 1 further comprising a pre-filter component and a post-filter component.
6. The method of Claim 1 wherein said transition is a dissolve, a fade, a wipe, a iris, a funnel, a mosaic, a roll, a door, a push, a peel, a rotate, or a special effect.

7. A method of processing video comprising:  
acquiring a set of positive and negative training patterns;  
generating a set of classifiers with said set of patterns;  
recursively training said set of classifiers with said negative training patterns;  
validating said set of classifiers; and  
selecting one of said classifiers.
8. The method of Claim 7 wherein said set of positive training patterns includes a set of transition video streams, and said set of negative training patterns includes a set of transition free video streams.
9. The method of Claim 7 wherein said validating said set of classifiers comprises validating said set of classifiers against a set of positive and negative validation patterns, said set of positive validation patterns includes a set of transition video streams, said set of negative validation patterns includes a set of transition free video streams.
10. The method of Claim 7 wherein said classifier comprises a real valued feed-forward neural network.
11. A method of processing video comprising:  
acquiring at random a video stream comprising at least two separate shots, said separate shots comprising a uninterrupted subset of said video stream;  
identifying a sub-section of said separate shots as a first shot transition and a second shot transition, a duration of said shot transitions determined by a transition probability distribution; and

generating a transition sequence comprising said first shot transition and said second shot transition of said duration.

12. The method of Claim 11 wherein said transition probability distribution represents a fixed duration.
13. The method of Claim 11 wherein said transition sequence is a dissolve, a fade, a wipe, a iris, a funnel, a mosaic, a roll, a door, a push, a peel, a rotate, or a special effect.
14. A video processing apparatus comprising:
  - a training component, said training component including a transition synthesizer, said transition synthesizer to generate a set of patterns to generate and train an effect detector; and
  - a detection component coupled to said training component, said detection component coupled to said effect detector to detect an effect.
15. The apparatus of claim 14 wherein said training component comprises a real-valued feed-forward neural network.
16. The apparatus of claim 14 wherein said set of patterns comprises:
  - a synthetic training pattern; and
  - a synthetic validation pattern
17. The apparatus of claim 14 wherein said set of patterns comprises:
  - a real training pattern; and
  - a real validation pattern.

18. The apparatus of claim 14 wherein said effect is a dissolve, a fade, a wipe, a iris, a funnel, a mosaic, a roll, a door, a push, a peel, a rotate, or a special effect.
19. A machine-readable medium that provides instructions, which when executed by a set of one or more processors, cause said set of processors to perform operations comprising:
- deriving at least one frame-based video stream, each of said frame-based video streams forms a time series stream;
  - re-scaling said time series stream;
  - generating a time series stream pyramid from said re-scaled time series stream;
  - inputting into a classifier a fixed-sized portion of said time series;
  - receiving from said classifier a transition probability, said transition probability determining the probability of whether a transition effect exist within said fixed-sized portion;
  - integrating said time series and said transition probability into a transition frame-based probability; and
  - outputting a location and a duration of said transition effect.
20. The machine-readable medium of Claim 19 further comprising a pre-filter component and a post-filter component.
21. The machine-readable medium of Claim 19 wherein said time series pyramid includes time series formed from at least one sampling rate to be used by said classifier.

22. The machine-readable medium of Claim 19 wherein said receiving said transition probability results in said transition probability generated at various scales.
23. The machine-readable medium of Claim 19 wherein said transition effect is a dissolve, a fade, a wipe, a iris, a funnel, a mosaic, a roll, a door, a push, a peel, a rotate, or a special effect.
24. A machine-readable medium that provides instructions, which when executed by a set of one or more processors, cause said set of processors to perform operations comprising:
- acquiring a plurality of positive training and validation patterns, said plurality of positive training patterns including a plurality of transition video streams, said plurality of positive validation patterns including a plurality of transition video streams;
  - acquiring a plurality of negative training and validation patterns, said plurality of negative training patterns including a plurality of transition free video streams, said plurality of negative validation patterns including a plurality of transition free video streams;
  - generating a set of classifiers using said plurality of positive and negative training patterns to train said set of classifiers;
  - generating an initial pattern set including a subset of said plurality of training patterns, inserting into said initial pattern set a falsely classified portion of said negative training patterns to train said refined set of classifiers;
  - validating said set of classifiers against said validation set of negative and positive patterns; and
  - selecting one of said classifiers.

25. The machine-readable medium of claim 24 wherein said classifier comprises a real-valued feed-forward neural network.
26. A machine-readable medium that provides instructions, which when executed by a set of one or more processors, cause said set of processors to perform operations comprising:
- acquiring of a video stream and a probability distribution, said video stream including a shot description;
  - determining a duration of a transition sequence according to said probability distribution;
  - selecting a first shot and a second shot, both shots are selected at random; and
  - generating said video transition sequence of said duration, said video transition sequence including a transition effect.
27. The machine-readable medium of claim 26 wherein said transition effect includes a portion of said first shot and a portion of said second shot.
28. The machine-readable medium of claim 26 wherein said video transition sequence includes a portion of said first shot before said transition effect, said transition effect, and a portion of said second shot after said transition effect.
29. The machine-readable medium of claim 26 wherein said transition effect is a dissolve, a fade, a wipe, a iris, a funnel, a mosaic, a roll, a door, a push, a peel, a rotate, or a special effect.